

REMARKS

Claims 1-18 were pending in this application. Claims 10-18 have been cancelled. Claims 1-9 have been amended.

1. Objections to Drawings Under 35 CFR 1.83(a)

The Examiner has objected to the drawings for failing to show every feature of the invention specified in claims 16-18. The Examiner has advised that the drawings must either be amended or Claims 16-18 cancelled. Responsive to this requirement, Applicant has cancelled Claim 16-18.

2. Rejection of Claims 9 and 18 Under 35 U.S.C. §112, Second Paragraph

The Examiner has rejected Claims 9 and 18 under 35 U.S.C. §112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as his invention. To overcome this rejection, Applicant has amended claim 9 to remove the expression “said thermosyphon heat pipe” and replaces it with an expression which has proper antecedent basis. The rejection of claim 18 has been avoided by the cancellation of claim 18.

3. Rejection of Claims 1 and 2 Under 35 U.S.C. §102(b)

The Examiner has rejected claims 1 and 2 as anticipated by Le Diouron (U.S. Patent No. 4,538,423) under 35 U.S.C. §102(b). Applicant respectfully traverses this rejection for the following reasons.

Contrary to the Examiner’s rejection, Le Diouron does not disclose a reactor, but a cooling apparatus (heat exchanger) for use in gas purification (see Col. 2, lines 23-27). Accordingly, Le Diouron does not have a reaction zone. The cooling apparatus of Le Diouron discloses an apparatus for condensing less volatile components from a gas mixture (Col. 1, lines

61-64). As such, it is respectfully submitted that Le Diouron could not suggest the presently claimed reactor which is designed to operate at near isothermal conditions (see Specification, page 6, lines 10-13). Nevertheless, to advance to prosecution of this case, Applicant has amended Claim 1 so that all presently pending claims now require that the thermally conductive extended heat transfers surfaces on the principal heat pipe which comprise sealed secondary heat pipes. This claimed feature is neither disclosed or suggested by Le Diouron or any other cited reference.

In the foregoing connection, Applicant points out that only the heat exchanger disclosed by Le Diouron which has both upper and lower tube sheets is the heat exchanger depicted in Figure 2. This heat exchanger contains only a single heat pipe 2 and conventional fins 13. The heat exchanger depicted in Figure 3 of Le Diouron contains heat pipes 2A and 29, but they are not mounted in a thermally conductive relation to a primary heat pipe. Note in this connection that 5A in Figure 3 is a discharge conduit having vertical wall 21 and not a heat exchange device. Thus, the apparatus in Figure 3 of Le Diouron does not disclose or suggest the presently claimed structure. The apparatus shown in Figure 4 of Le Diouron has only a single tube sheet and utilizes conventional fins 13B in association with a series of heat pipes which are mounted on a single tube sheet. Since nothing in Le Diouron discloses or suggests the advantages of a isothermal reactor comprised of a primary heat pipe having secondary sealed pipes in thermally conductive relationship therewith, it is respectfully submitted that the presently pending claims are neither anticipated nor rendered obvious by Le Diouron.

4. Rejection of Claims 1 and 3 Under 35 U.S.C. §102(b)

The Examiner has rejected Claims 1 and 3 as anticipated by Grunes (U.S. Patent No. 4,393,663) under 35 U.S.C. §102(b).

Applicant respectfully traverses this rejection because Grunes discloses neither a reactor, nor a reactor having inlet and outlet tube sheets with a reaction zone therebetween. Rather, Grunes discloses a thermosyphon heater which has no internal reaction zone. Further, the structure in Figure 3 of Grunes which the Examiner has described tube sheets are in fact headers connecting heat pipes 41. In fact, nothing in Grunes discloses nor suggests a structure containing a tube sheet.

Notwithstanding the above distinguishing features, to advance the prosecution of this application, claim 1 and 3 have been amended to limit them to a structures which includes a secondary sealed heat pipe. Nothing in Grunes discloses or suggests the use of secondary sealed heat pipes in conjunction with a primary sealed heat pipe. Accordingly, it is respectfully submitted that, as amended, Claims 1 and 3 avoid the cited prior art.

5. Rejection of Claims 10, 11, 13 and 14 Under 35 U.S.C. §103(a)

The Examiner has rejected claims 10, 11, 13 and 14 as obvious in view of Le Diouron taken in conjunction with Seshimo (U.S. Patent No. 5,009,263) under 35 U.S.C. §103(a). The rejection of these claims has been mooted by their cancellation.

6. Rejection of Claims 12 and 15 Under 35 U.S.C. §103(a)

The Examiner has rejected claims 12 and 15 as obvious over Grunes and Seshimo. Applicant submits that cancellation of claims 12 and 15 render this rejection moot.

7. Rejection of Claims 4, 5 and 7-9 Under 35 U.S.C. §103(a)

The Examiner has rejected claims 4, 5 and 7-9 as obvious in view of Le Diouron taken in conjunction with Wisniewski (U.S. Patent No. 6,196,296) under 35 U.S.C. §103(a).

The limitations of Le Diouron as a reference against the presently pending claims has been discussed above. Wisniewski does not overcome the limitations of Le Diouron because

Wisniewski does not teach the use of a principal heat pipe and does not teach the use of a secondary heat pipe in thermally conductive relation with a principal heat pipe.

As indicated at Col. 9, lines 55-67 of Wisniewski, the only embodiment of Wisniewski which discloses fins containing a heat transfer fluid (disclosed in Figure 11) contains fins into which heat transfer flows through openings. Accordingly, the fins of Wisniewski are not sealed heat tubes as claimed but rather conventional heat transfer surfaces. Since neither Wisniewski's primary heat transfer surface, nor its secondary heat transfer surface is a heat pipe, Wisniewski cannot overcome the limitations of Le Diouron. Accordingly, it is respectfully submitted that claims 4, 5 and 7-9 are patentable over the instant §103(a) rejection.

8. Rejection of Claims 16-18 Under 35 U.S.C. 103

The Examiner's rejection of claims 16-18 over Le Diouron taken into conjunction with Wisniewski and Seshimo is mooted by the cancellation of claims 16-18.

9. Rejection of Claim 6 Under 35 U.S.C. §103(a)

Claim 6 has been rejected obvious in view of Grunes taken in conjunction with Wisniewski. As indicated above, Wisniewski fails to disclose a heat exchange device having sealed secondary heat tubes mounted in thermal conductive relation to a primary heat pipe. Accordingly, it is respectfully submitted that Wisniewski cannot overcome the limitations of Grunes as referenced. It is respectfully submitted that claim 6 avoid the present rejection.

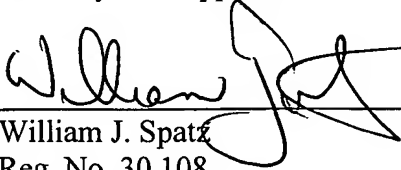
For the foregoing reasons, it is respectfully submitted that the presently pending claims are allowable and early issue of a Notice of Allowability with respect to the same is appropriate. If, however, the Examiner believes that there are any issues which present an impediment to allowance, it is respectfully requested that the undersigned be contacted by telephone to conduct a telephone interview.

If additional fees are due, the Commissioner is authorized to charge the same to Deposit
Account No. 50-0540.

Respectfully submitted,

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